

What is claimed is:

Sub A4 1. A digital signal receiver comprising:
an input terminal for receiving an input signal with digitally-modulated;

5 at least two variable gain amplifiers coupled in series to said input terminal for controlling the level of the input signal;

an analog-to-digital (A/D) converter for receiving an output of said variable gain amplifier;

10 a level comparator coupled to an output of said A/D converter for comparing a level of the output of said A/D converter and a reference level;

a loop filter coupled to said level comparator; and

a control voltage generator for generating control voltages for controlling said variable gain amplifiers based on an output of said loop filter,

15 wherein an operation-starting point of any of said variable gain amplifiers is shifted with using the control voltages.

20 2. The digital signal receiver according to claim 1, wherein the operation-starting point is shifted when the operation-starting point is the same as a level of the input signal.

25 3. The digital signal receiver according to claim 1, wherein the operation-starting point is shifted when a level of the input signal is at a saturation point of said any of said variable gain amplifiers.

4. The digital signal receiver according to claim 1, wherein the operation-starting point is shifted based on an average of the control

voltage for said any of said variable gain amplifiers and a fluctuation frequency of the control voltage for said any of said variable gain amplifier.

5 5. The digital signal receiver according to claim 1, wherein the operation-starting point is shifted based on an average of the control voltage for said any of said variable gain amplifier and a level fluctuation amplitude of the input signal.

10 6. The digital signal receiver according to claim 1, wherein the operation-starting point is shifted based on the control voltage for said any of said variable gain amplifier and an electric power ratio of an adjacent channel and a desired channel.

15 7. A digital signal receiver comprising:
an input terminal for receiving an input signal with digitally-modulated,

at least two variable gain amplifiers coupled in series to said input terminal for controlling the level of the input signal,

20 an analog-to-digital (A/D) converter for receiving an output of said variable gain amplifier,

a level comparator coupled to an output of said A/D converter for comparing a level of the output of said A/D converter and a reference level,

a loop filter coupled to said level comparator, and

25 a control voltage generator for generating control voltages for controlling said variable gain amplifiers from an output of said loop filter, wherein a bandwidth of said loop filter is controlled with using the control

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voltages.

5 8. The digital signal receiver according to claim 7, wherein the bandwidth is controlled based on average values of the control voltages and fluctuation frequencies of the control voltages.

9. The digital signal receiver according to claim 7, wherein the bandwidth is controlled based on average values of the control voltages and a level fluctuation amplitude of the input signal.

10 10. A digital signal receiver comprising:
an input terminal for receiving an input signal with digitally-modulated,

15 a variable gain amplifier coupled to said input terminal for controlling a level of the input signal,

an analog-to-digital (A/D) converter for receiving an output of said variable gain amplifier,

a demodulator for demodulating an output of said A/D converter, and

20 a ghost detector coupled to an output of said demodulator for detecting a delay time of ghost, comprising:

a delay unit for delaying the output of said demodulator,

a ghost calculator for calculating the delay time and an energy of ghost,

25 a coefficient unit, and

an averaging unit for calculating a coefficient of said coefficient unit,

wherein a number of times of averaging at said averaging unit is controlled based on the delay time.

11. A digital signal receiver comprising:

5 an input terminal for receiving an input signal with digitally-modulated,

a variable gain amplifier coupled to said input terminal for controlling a level of the input signal,

10 an analog-to-digital (A/D) converter for receiving an output of said variable gain amplifier,

a level comparator coupled to an output of said A/D converter for comparing a level of the output of said A/D converter and a reference level,

a loop filter coupled to said level comparator,

15 a demodulator for demodulating the output of said A/D converter, and

a ghost detector coupled to an output of said demodulator for calculating a delay time of ghost,

wherein an operation-starting point of said variable gain amplifier is shifted based on the delay time.

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12. A digital signal receiver comprising:

an input terminal for receiving an input signal by digitally-modulated;

25 a variable gain amplifier coupled to said input terminal for controlling a level of the input signal,

an analog-to-digital (A/D) converter for receiving an output of said variable gain amplifier;

a level comparator coupled to an output of said A/D converter for comparing a level of the output of said A/D converter and a reference level,
a loop filter connected to said level comparator,
a demodulator for demodulating the output of said A/D converter,
5 and
a ghost detector connected to an output of said demodulator for calculating a delay time of ghost,
wherein a bandwidth of said loop filter is controlled based on the delay time.

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13. A digital signal receiver comprising:
an input terminal for receiving an input signal with digitally-modulated;

a variable gain amplifier coupled to said input terminal for controlling a level of the input signal;

15 an analog-to-digital (A/D) converter for receiving an output of said variable gain amplifier;

a level comparator coupled to an output of said A/D converter for comparing a level of the output of said A/D converter and a reference level,

20 a loop filter coupled to said level comparator, and

a carrier-to-noise (CN) ratio detector coupled to the output of said A/D converter for detecting a carrier-to-noise (CN) ratio of an input signal into said A/D converter,

25 wherein an operation-starting point of said variable gain amplifier is shifted based on the CN ratio.

14. A digital signal receiver comprising:

an input terminal for receiving an input signal by digitally-modulated;

a variable gain amplifier coupled to said input terminal for controlling a level of the input signal,

5 an analog-to-digital (A/D) converter for receiving an output of said variable gain amplifier;

a level comparator coupled to an output of said A/D converter for comparing a level of the output of said A/D converter and a reference level,

a loop filter coupled to said level comparator, and

10 a carrier-to-noise (CN) ratio detector coupled to the output of said A/D converter for detecting a carrier-to-noise (CN) ratio of an input signal into said A/D converter,

wherein a bandwidth of said loop filter is controlled based on the CN ratio.

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